



C H A P T E R 3

THE GLOBAL MACROECONOMIC SITUATION

Although the United States experienced continued growth and robust job creation, the global economy in 2015 had unexpectedly low growth across many regions relative to expectations and even relative to the more-subdued growth seen in recent years. The downward shift in growth has both a broader, longer-term aspect, as it has applied to both many advanced economies and emerging markets continuously over the last five years, and a more acute presentation over the last year and into the beginning of 2016 arising in large part from developments in emerging markets. The broader downward revisions to growth forecasts have involved an overall environment of weak global demand, disappointing global productivity, and shifting demographics. While both advanced and emerging economies have missed growth expectations, over the last year a number of advanced economies have roughly met or exceeded expectations, while the biggest downward revisions in forecasts have been among large emerging market countries.

To illustrate the unexpected nature of the developments, the International Monetary Fund (IMF) in January 2016 estimated global real gross domestic product (GDP) growth of 3.1 percent in 2015 and predicted that it would rise to 3.4 percent in 2016 (IMF 2016). The Organisation for Economic Co-operation and Development (OECD), in a separate analysis in November 2015, forecast global growth of 2.9 percent in 2015 and 3.3 percent in 2016 (OECD 2015). Both of these growth estimates for 2015 were well below those forecasted just over a year earlier of 3.8 percent and 3.7 percent, respectively. The deteriorating estimates underscore that weaker global growth, particularly among U.S. trading partners, was a headwind to U.S. economic growth in 2015.

The IMF's estimated 3.1-percent growth rate of global real GDP in 2015 was slightly lower than the growth rate over the last three years, and well below both the growth rate earlier in the recovery and the pre-crisis average of between 4 and 5 percent. This slowdown was not anticipated in

earlier forecasts. Figure 3-1 shows the IMF's forecast for global growth at different points in time. The solid line represents the actual growth outcomes while the dotted lines show the forecast. At first, as growth slowed, the IMF—along with most other forecasters—expected a near-term pickup in growth to over 4 percent. Growth has fallen short of expectations in many regions, including both advanced and emerging-market economies.

The global slowdown and the contrast in U.S. growth expectations compared with the world have contributed to a major appreciation of the U.S. dollar. The real trade-weighted dollar as measured by the Federal Reserve's broad index began appreciating sharply in mid-2014 and strengthened 17 percent between July 2014 and December 2015 (see Figure 3-2). This is a historically large appreciation. Since the collapse of the Bretton Woods system in the early 1980s, the dollar has appreciated that quickly only two other times: first during the sharp monetary tightening in the early 1980s and again after the onset of the East Asian Crisis in 1997-98. Among the drivers of the recent appreciation is the strong performance of the U.S. economy against a backdrop of relatively weak growth in the rest of the world. As a result, U.S. Federal Reserve policy is at a different juncture than monetary policy in most foreign countries. While markets expect the Federal Reserve to reduce monetary policy accommodation throughout 2016, the European Central Bank (ECB) and the Bank of Japan (BOJ) are in the midst of maintaining or expanding monetary stimulus with the aim of raising inflation from low levels toward 2 percent.

As discussed in Chapter 2, the slowdown in global growth is a headwind for the U.S. economy—contributing to slower growth of exports. Real net exports subtracted more than half a point from U.S. real GDP growth over the four quarters of 2015 on a growth accounting basis. In addition, if the global situation deteriorated, it would present a more substantial risk to the U.S. economy—as well as to economies worldwide. That is why it is critical for economies around the world to focus on growth, undertaking the necessary steps to expand demand, reform supply, encourage trade, and manage economic and financial developments as appropriate in different contexts.

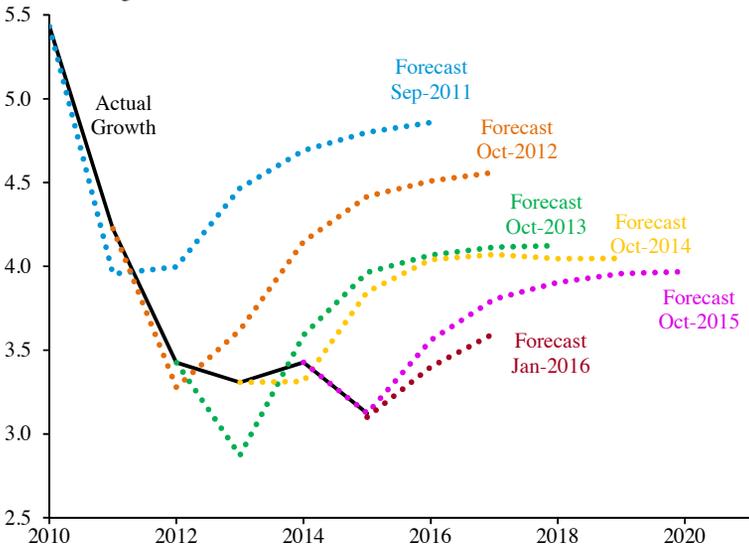
SOURCES OF THE BROADER SLOWDOWN

The slower growth in the world economy relative to the pre-crisis era stems largely from slowdowns relative to expectations in emerging-market economies, including large economies like India and China, as well as disappointing growth in Europe. Figure 3-3 compares the growth of GDP per working-age person from 2011 to 2014 relative to 2002 to 2007, with points

Figure 3-1

IMF World Real GDP Growth Forecast, 2010–2020

Percent Change, Year-over-Year

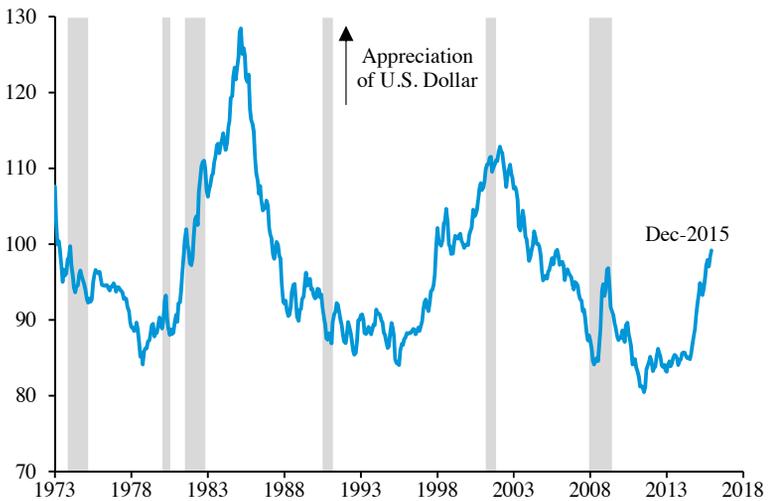


Source: International Monetary Fund (IMF).

Figure 3-2

Real Broad Trade-Weighted Dollar, 1973–2015

Index (Mar-1973=100)

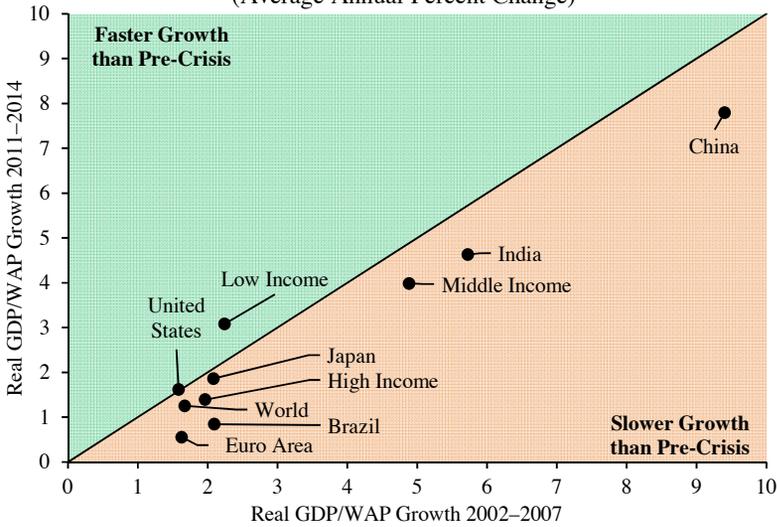


Note: The index above is a weighted average of the foreign exchange values of the U.S. dollar against major U.S. trading partners.

Source: Federal Reserve Board; Haver Analytics.

Figure 3-3

**Real GDP per Working Age Population (WAP), Pre- vs. Post-Crisis
(Average Annual Percent Change)**



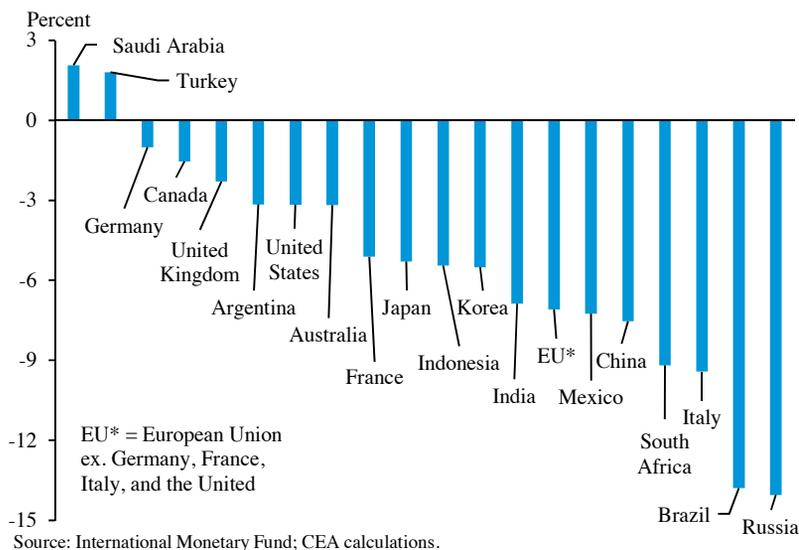
Note: Working age population is aged 15-64.
Source: World Bank; CEA calculations.

on the 45-degree line representing unchanged growth rates between these two periods. In general, while they may still have some demand-related slack to make up following the crisis, the United States and Japan are growing at similar rates compared with their growth before the financial crisis after adjusting for changes to working-age population. Low-income countries have, on average, seen an increase in growth. The euro area has slowed relative to pre-crisis rates of growth, with some large emerging markets also slowing.

A similar pattern emerges in downgrades to the IMF forecasts over the past five years. Overall, the level of output among G-20 countries is 6-percent smaller in 2015 than what the IMF had predicted in 2010, after the full extent of the recessions caused by the financial crisis became apparent. Growth over the last five years has fallen short of expectation in 18 of the 20 G-20 economies, as shown in Figure 3-4, with only Saudi Arabia and Turkey slightly exceeding expectations, compared with substantial shortfalls across some other nations. In total, China and India account for about half of the 6-percent underperformance of the G-20 economy relative to the 2010 projections—with shortfalls in the United States and the European Union accounting for another one-quarter. The United States accounts for a sizeable part of the aggregate slowdown despite good growth in GDP per working-age person and having a relatively small cumulative growth shortfall (just 3.2 percent over the period) because it is such a large share of the

Figure 3-4

**Percent Gap Between Actual and Projected (Oct-2010)
Cumulative Real GDP Growth between 2010 and 2015**



world economy. Likewise, China and India did not underperform as much as Russia or Brazil, but they make up a larger part of the shortfall because they are a much more significant part of the world economy.

The persistently disappointing world growth over the last half-decade has root causes both in longer-term demand and supply. On the supply side, there has been disappointing labor productivity growth, or the ability to produce more output from the same labor inputs, across a range of countries since the crisis. While variable from year to year, G-7 countries had average labor productivity growth rates near or above 2 percent a year throughout the latter half of the 20th century. Those rates have all dropped; in some cases, to near zero. Labor productivity growth for Japan is projected to be a sixth of its annual rate from 1999 to 2006 and, for the euro area, a third of its average preceding the financial crisis. Similarly, for most other advanced economies, labor productivity is projected to be much lower in 2015 than it was prior to the financial crisis (Conference Board 2015). Productivity growth in the United States has broadly outperformed other countries with both a smaller decline from the 1950-2007 period and one of the higher growth rates in the G-7 at present. Some of the slowdown may simply reflect a slow global recovery. An important factor in lower productivity growth has been the decline in the pace of investment per worker—referred to as capital deepening. To the extent that this represents a cyclical shortfall in demand,

economists would expect capital deepening and productivity growth to pick up in the coming years.

Sharp and persistent productivity slowdowns are not unprecedented (Eichengreen, Park, and Shin 2015), but, if sustained, slower productivity growth will mean slower output growth and slower improvements in living standards. Particularly concerning is the fact that global total factor productivity (TFP) growth, an indication of innovation above-and-beyond just deploying more capital, has slowed to roughly zero in the last three years following pre-crisis rates of 1 percent (Conference Board 2015).

At the same time, the labor force is growing more slowly in the United States and many other economies around the world. The size of the labor force, determined both by population changes and movements in the rate at which people choose to participate in the labor market, provides the other key supply-side input for overall economic growth. With an aging population and falling labor force participation rates across demographic groups, the size of the labor force has presented a headwind to U.S. growth, mirrored to varying degrees across other economies globally (See Box 3-1).

In addition, as noted in Chapter 2, investment has been disappointing in all of the major advanced economies since the financial crisis. This is worrying from a supply perspective, as there will be a lower capital stock and possibly lower productivity growth in the future due to reduced investment today; but it also represents a lack of demand in the world economy. Lower investment can generally be explained by the slower pace of global recovery, as faster growth generates more investment demand by firms, but lower investment also represents lower demand for goods and services itself.

Persistent demand weakness has been visible in many countries. The unemployment rate has stayed well above pre-crisis averages in many countries and weak price growth has been a signal of a lack of demand pressure in the economy. Beyond weak investment demand, aggregate demand may have been persistently weak for reasons related to debt overhang and wealth loss remaining from the financial crisis. Families, firms, and, in some countries, governments saw a significant run-up in debt prior to the financial crisis, as well as a loss of wealth from falling asset and home prices and high levels of insolvency during the crisis itself. Even several years later, they may hold back on spending and investment as they try to deleverage and rebuild their balance sheets.

“Secular stagnation,” where chronically insufficient aggregate demand cannot be remedied by conventional monetary policy, could also play a role in weak growth in certain economies. Stagnation occurs when even a real interest rate of zero does not generate enough investment growth to fully utilize the economy’s resources. A number of features of the economy could

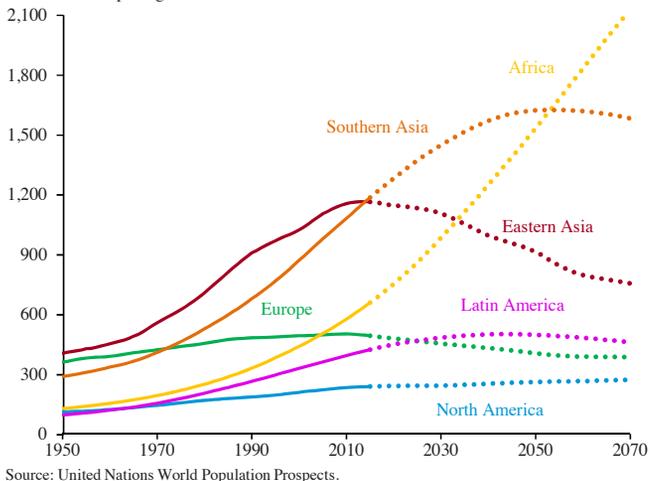
Box 3-1: Changing Demographic Trends and Global Growth

Demographics play a large role in the long-run trend of economic growth by affecting labor supply, capital formation, and productivity (IMF 2004). A major part of any country's real GDP growth is simply its population growth, as growing populations provide more workers as well as rising demand for products, new homes, and services. Beyond that, increases in the relative size of the working-age population (people aged 15 to 64) can also have a major impact on output per capita by directly changing the labor supply. Demographic changes also indirectly affect the amount of resources per capita through changes in household savings behavior across their life cycles. Lower dependency ratios (the ratio of people younger than 15 or older than 64 to the working-age population) can raise savings, which helps finance more investments and increases output. Finally, demographics indirectly affect productivity growth through changes in the quality of human capital formation and innovation. Nevertheless, the reverse is also true. Demographic changes can act as a drag on economic growth (Kohshaka 2013).

Global demographic trends are at a turning point. Population growth is slowing and, after increasing for the previous five decades, the proportion of the population that is working-age peaked at 66 percent in 2012. This proportion is projected to decline steadily for the next century. This slower growth in the working-age population—or outright contraction—will continue to be a drain on global growth for the foreseeable future. Stark differences at the country level lie beneath this global trend. As seen in Figure 3-i, working-age populations are now shrinking in Europe and in East Asia broadly, not just as a share of the population, but in raw numbers. In North and Latin America, working-age populations are projected to flatten out over time, while Southern Asia and Africa will continue to see an increase. Collectively, these regional demographic trends signal additional risks to future global economic growth.

Over the next 30 years, half of the world's population will live in Africa and Southern Asia; global population growth will be driven by their high fertility and relatively young populations. As a result, the bulk of new workers in the global economy will be added in economies that have lower levels of education, technology, and capital, implying those workers will not be as productive, if current circumstances continue. By 2035, the number of people joining the working-age population from Sub-Saharan Africa and Southern Asia will exceed that from the rest of the world combined. This means both South Asia and Africa will be increasingly important to global growth. It will be necessary to build

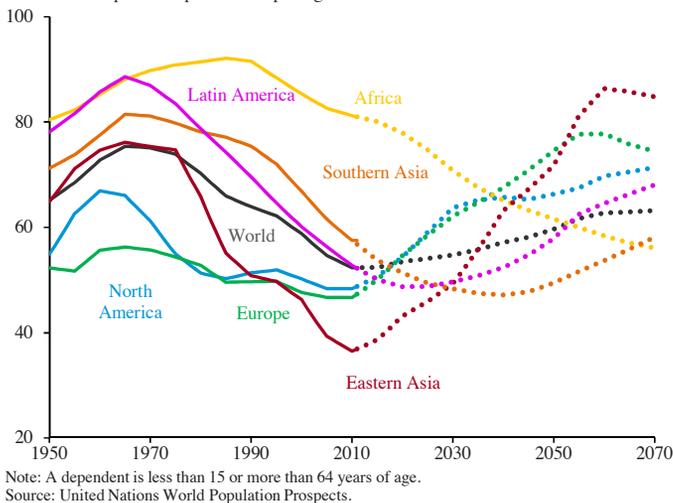
Figure 3-i
Actual and Forecasted Working-Age Population by Region, 1950–2070
 Millions of People Aged 15-64



institutions and economies that can lead global growth in these places (IMF 2015c).

The other half of the world’s population will experience slowdowns in population growth with rising shares of the elderly. Substantial aging is projected in Europe and East Asia (see Figure 3-ii). By 2050, the

Figure 3-ii
Actual and Forecasted Dependency Ratios by Region, 1950–2070
 Number of Dependents per 100 People Aged 15-64

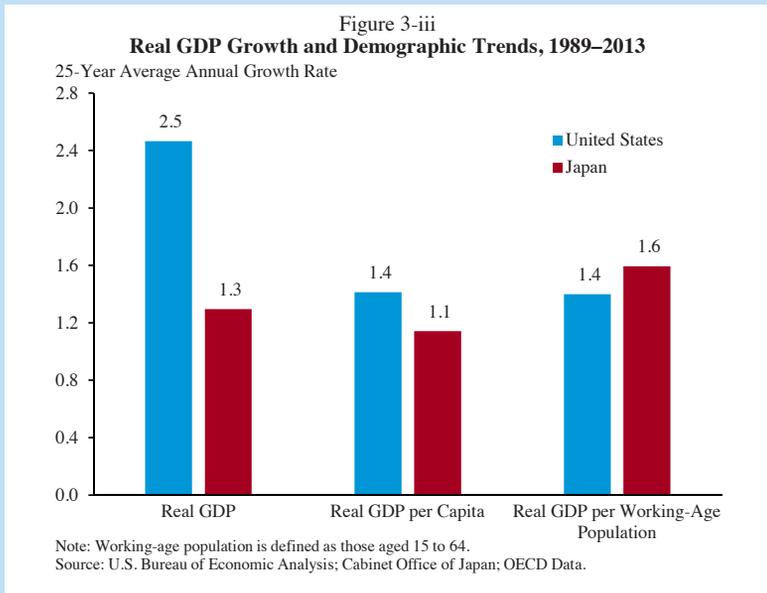


Note: A dependent is less than 15 or more than 64 years of age.
 Source: United Nations World Population Prospects.

regions are forecasted to have 73 dependents (people younger than 15 or older than 64) for every 100 working-age persons.

Aging populations can put pressure on public budgets, with fewer workers supporting more pensions, and generally supporting slower growth. These dangers have materialized in Japan. Economic growth in Japan is stagnant (and forecasted to remain so) in large part because growth in the working-age population has lagged behind growth in the total population for the last 20 years (Mühlesisen and Faruqee 2001). The U.S. economy grew almost twice as fast as Japan's from 1989 to 2013. However, simply controlling for population by comparing growth of GDP per capita leads to much more similar growth rates (1.4 percent versus 1.1 percent). Even more striking is that when examining GDP per working-age person, Japan had slightly faster growth than the United States (Figure 3-iii). This highlights that even if a country is doing reasonably well conditional on its demographics—as Japan has—it still means slow growth over time if too few workers enter the labor force. And even if income per capita is rising, slow overall growth due to slow population growth can greatly increase the challenges associated with government debt and financing future government commitments (Karam, Muir, Pereira, and Tuladhar 2011). These issues are now coming to the forefront of the global economy.

Demographics is not just the exogenous result of developments outside of public policies, it also depends on those policies. In some countries, for example, pro-natal policies have raised birth rates and



affected the demographic trajectory (Kalwij 2010; Wong, Tang, and Ye 2011). In the United States, immigration reform would expand the working-age population and reduce the ratio of children and elderly relative to prime-age workers. In addition, even for a given demographic structure, steps that facilitate work and raise the labor force participation rate will increase economic growth.

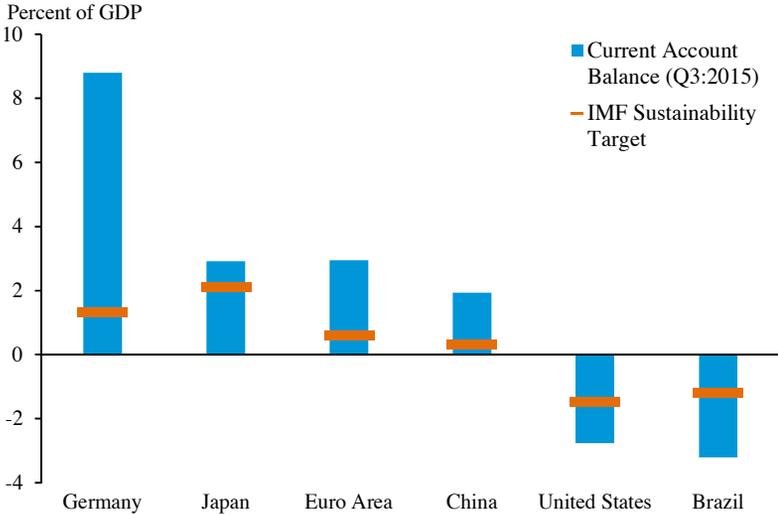
lead to this result, ranging from falling population growth that provides fewer consumers and shifts investment demand to rising inequality that concentrates spending power in the hands of people who have higher propensity to save. Secular stagnation is likely not an appropriate way to describe the overall world economy—or the United States—today, but it may be a useful way to think about some pockets of weakness or risks that could be faced if the zero lower bound becomes more constraining in dealing with future recessions. In some countries, like Japan and possibly the euro area, the combination of a low equilibrium real interest rate, low inflation expectations emanating from weak demand, and unfavorable demographics makes it very hard for monetary policy alone to stimulate the economy.

The current account balance provides another way to examine relative strengths and weaknesses in demand in the global economy. Countries that produce more than they consume and invest (net exporters) may have weaker aggregate demand—more demand-related “slack”—than those whose demand exceeds production (net importers). Despite substantial progress in reducing the current account deficit to a 14-year low in 2014, the United States still runs a larger current account deficit than its sustainability target as estimated by the IMF (see Figure 3-5); in part, reflecting the relative strength of U.S. demand compared with the rest of the world. China, Japan, and the euro area—especially Germany—all have larger current account surpluses than either their most recent IMF sustainability targets, current account norms, or both.

In short, various parts of the world economy are growing slowly, and likely too slowly. U.S. economic performance has clearly been stronger than the rest of the world and has left it with less demand-related slack in the economy. Still, the U.S. economy is not a large enough share of the world economy, nor can it grow fast enough, to solely support world growth. Even with relatively pessimistic projections for China and emerging markets, those countries are projected to provide the bulk of growth in the world economy over the coming decades. If they slow more than expected, global growth could fall further. 2015, though, has been a difficult year for many emerging markets (IMF 2014 and 2015d).

Figure 3-5

Current Account Balance as a Share of GDP, 2015



Note: The IMF Sustainability Target is the current account balance necessary to stabilize the nonfinancial account; targets as of 2015.

Source: International Monetary Fund (IMF); National Sources via Haver Analytics.

DEVELOPMENTS IN 2015

In contrast to the broader lack of demand affecting the global economy, 2015 brought a more acute set of challenges for some emerging markets. Over the past year, countries experiencing the biggest downward revisions in IMF forecasts were emerging markets and commodity producers; Argentina and India had the only upward revisions among emerging markets in the G-20. Advanced economies have fared slightly better relative to forecasts, in part because expectations have not been high. The European Union and Japan were not expected to grow rapidly and had only small revisions (IMF 2014 and 2015d).

Euro area

Recovery from the financial and sovereign debt crises in the euro area remained uneven, but gained some momentum in 2015. The euro area manufacturing sector rebounded in 2015, expanding in December at its fastest pace in 20 months. In addition, all major euro-area nations experienced positive growth in output and job creation in December for the first time since April 2014. Domestic demand in the euro area remains below its pre-crisis peak, driven by weak investment, but growth in real GDP across Greece, Ireland, Italy, Portugal, and Spain (GIIPS) as a group increased (see Figure 3-6), although Greece contracted by 0.8 percent at an annual rate

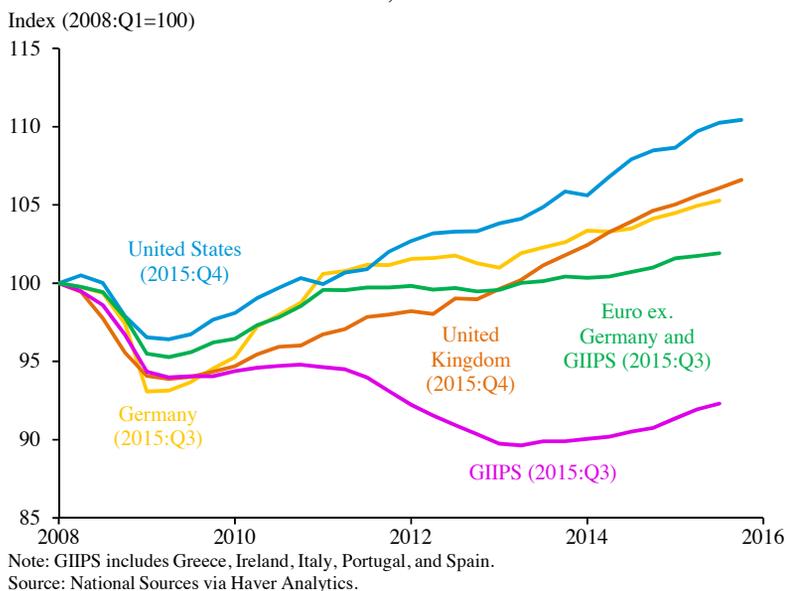
over the first three quarters of 2015. Nonetheless, the level of output relative to before the crisis remained much lower for the GIIPS than in the rest of the euro area—especially Germany. (See Figure 3-6 and Box 2-7 on growth across advanced economies.)

Unemployment rates tell a similar story: they have improved in the past year, but many countries in the euro area are still suffering high levels of joblessness. The unemployment rate fell to 10.4 percent by December 2015 for the euro area as a whole, a full point lower than a year before. The rate either declined to, or remained within, the low range of 4.5 to 6.1 percent in Germany, Austria, and Luxembourg. In contrast, it remained above 10 percent in Slovakia; Italy; Portugal; Cyprus; and France, which saw a record number of jobless workers in October. In Spain and Greece, the unemployment rate was still above 20 percent. This huge range in unemployment rates across the euro area (from 4.5 percent in Germany to 24.5 percent in Greece) stands in contrast to the range across U.S. states (from 2.7 percent in North Dakota to 6.7 percent in New Mexico).

While output expanded in nearly all euro-area countries, weak domestic investment and demand abroad has weighed down growth in the euro area. Investment remains subdued in both the GIIPS (as a group) and Germany as a fraction of GDP relative to other euro-area countries in 2015. Euro area real GDP growth slowed to 1.2 percent at an annual rate in the third quarter of 2015, primarily due to a slowdown in export growth.

To some degree, the euro-area economy is still struggling with the vestiges of the euro crisis. Uncertainty over global and regional conditions—for instance, the path of monetary policy, regional political issues, or foreign demand conditions—may be one cause of the subdued level of investment. The Greek situation is one example of such uncertainty. Greece experienced a sharp upswing in sovereign borrowing rates in the first half of the year (from around 9 percent in January to a peak of over 18 percent in July) as failure to implement reforms required by lenders resulted in a lending freeze, raising tensions that peaked in a referendum in July, where voters rejected the conditions of international lenders. Fears arose that Greece would have to exit from the euro area's currency union when partner countries cut off credit to banks through the euro system, with Greece imposing strict currency controls and rationing cash withdrawals from banks. However, in late summer, Greece reached an agreement with euro-area partner countries to receive additional financing from the European Union. The Syriza government in Greece, under the leadership of Prime Minister Alexis Tsipras, followed the agreement with domestic votes on economic and fiscal reforms. The measures calmed investor fears of a Greek exit from the euro area (see Figure 3-7). Greece's manufacturing sector remained in a severe downturn

Figure 3-6
Real GDP, 2008–2015



throughout 2015, though its rate of contraction eased late in the year following the resolution of the acute problems in July with financial support from the European Union, other euro-area members, and accommodations from the European Central Bank (ECB) coinciding with progress on reforms.

Euro-area inflation was low in 2015, despite the labor market recovery in some countries, further evidence that domestic demand remains weak. Figure 3-8 shows that euro-area inflation remains well below the ECB’s goal for the inflation rate of close to but not exceeding 2-percent. As inflation continued to slow, the ECB increased its monetary stimulus in 2015, purchasing 60 billion euro in sovereign bonds each month (quantitative easing) and lowering a key policy rate of interest to minus 0.3 percent. Despite the ECB’s additional stimulus, a key challenge remained that interest rates were highest in countries where unemployment was highest. The inability to target monetary stimulus limits the ECB’s ability to help countries with the greatest economic slack and may prevent convergence across regions. Thus, monetary policy alone is not sufficient to address the challenge of weak demand.

One reason that the United States has recovered more quickly than other advanced economies is its combination of accommodative monetary policy, quick action to recapitalize the financial sector, and aggressive demand management through countercyclical fiscal policy. In contrast,

Figure 3-7
**Euro Area Sovereign Interest Rate Spreads
 Over Germany, 2007–2015**

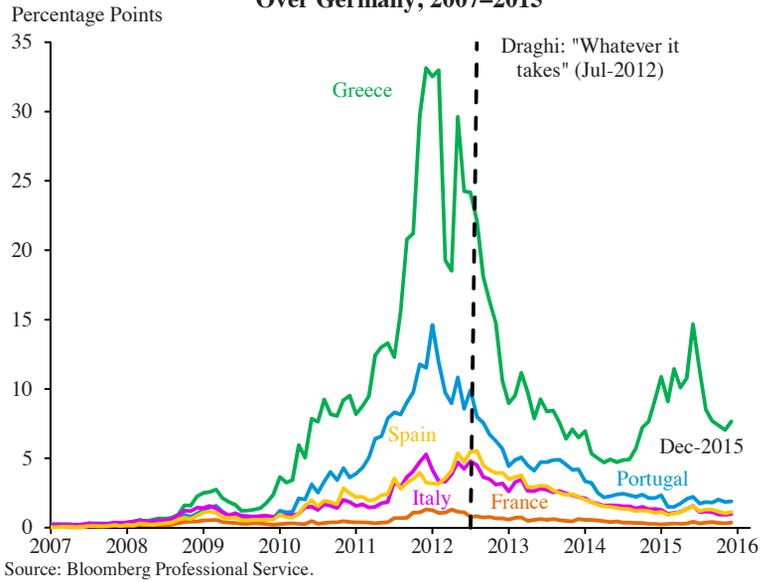
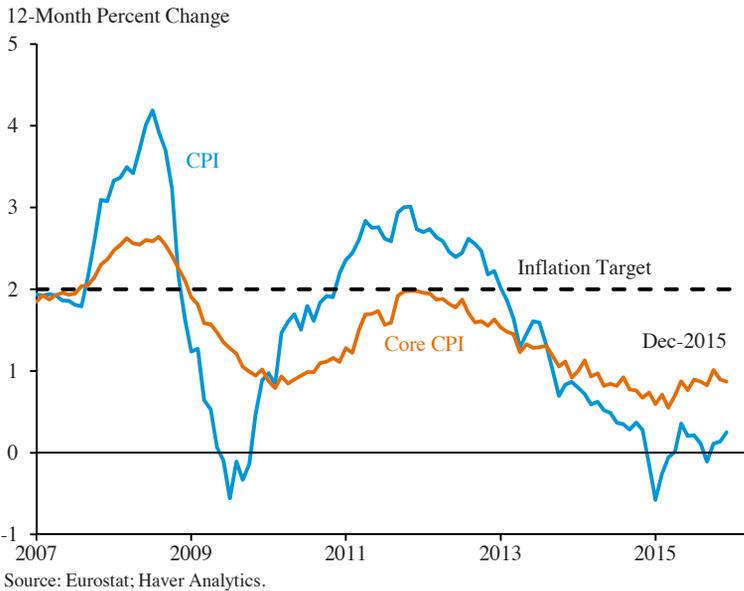


Figure 3-8
Core and Overall Inflation in the Euro Area, 2007–2015



some euro-area countries are constrained by fiscal rules and were unable or unwilling to pursue stronger countercyclical measures. The Federal Reserve pursued several large-scale asset purchase programs from 2008 to 2014, dramatically expanding its balance sheet. In contrast, the ECB's balance sheet (as measured by the asset side) grew more slowly in the crisis and, after a brief surge in late 2011 and early 2012, was allowed to contract between mid-2012 and mid-2014, as euro-area banks repaid the ECB long-term loans taken out during the crisis. The ECB reversed course and began large-scale asset purchases in January 2015. Although the ECB voted in December 2015 to extend quantitative easing until at least March 2017 and to augment it with other measures, markets appeared to have expected more forceful monetary stimulus: the euro jumped 3.1 percent, producing the largest one-day appreciation of the euro since March 2009.

United Kingdom

Real GDP growth in the United Kingdom has oscillated somewhat since mid-2014. Real GDP grew 2.2 percent at an annual rate in 2015, down from 2.9 percent in 2014, which was the highest rate since 2005. U.K. real GDP in the fourth quarter of 2015 was 14 percent above its trough in the second quarter of 2009. The labor market recovered further in 2015, with unemployment falling to 5.1 percent in the three months to November, the lowest rate in at least 7 years. The slowdown in U.K. GDP growth in the third quarter was largely accounted for by a large decline in net exports, with exports declining amidst growth in imports. While the annual rate of core (excluding energy and unprocessed food) CPI inflation averaged 0.8 percent below its inflation target, the Bank of England held the policy rate steady throughout 2015.

Japan

Japan continued to face longstanding economic challenges in 2015, but experienced some signs of renewal. Japan's economy contracted in the second quarter of 2015, but rebounded in the third quarter and the economy is showing more fundamental signs of longer-term recovery. Periodic recessions have plagued Japan since a financial crisis in 1992 and may, in part, be a byproduct of the country's declining population, which weighs on both potential GDP growth and aggregate demand. When looking at real GDP per working-age population rather than real GDP, for example, Japan has recovered from the global financial crisis almost as robustly as the United States. Japanese real private domestic final purchases (PDFP), which excludes volatile components of GDP—like net exports, inventories, and government spending—has been growing (see Box 2-1 in the 2015 Economic Report of

the President for a discussion of the merits of PDFP as a predictive measure of real activity in the United States). The spring *shunto* labor negotiations gave the biggest wage increases since 1998; as a result, real wages have grown this year. The Japanese economy has grown at an average annual rate of 1.6 percent over the first three quarters of 2015—faster than the average annual pace of approximately 1 percent experienced over the last five years.

Prime Minister Shinzo Abe has pursued a package of structural reforms aimed at jumpstarting growth in the Japanese economy, in addition to campaigning for monetary stimulus and advocating for “flexible” fiscal policy. To address the economic burdens of a population that is both aging rapidly and shrinking, the Abe administration has pursued new policies that have led to an increase in the female labor force participation rate and the overall share of working-age adults who are employed. Nonetheless, the aging population presents fiscal challenges and weighs on workforce participation, weakening domestic demand. To provide further support for domestic demand, the Bank of Japan (BOJ) expanded its monetary stimulus, voting various times over the course of 2015 to continue targeting growth in the money supply at an annual pace of 80 trillion yen (about \$660 billion). Despite these efforts, inflation has fallen precipitously since late 2014, mostly on declining energy prices, hitting zero in the second half of 2015. While this raises concerns that the struggle with deflation is not yet over, measures of inflation that exclude energy are trending upward: the BOJ’s recently emphasized “alternative core core” inflation metric, which strips out fresh food and energy, increased from 0.4 percent year-on-year in January to 1.2 percent year-on-year in September, October, and November 2015, closer to the BOJ’s 2-percent target.

Emerging markets

Buffeted by both global and country-specific factors, many emerging markets have experienced slowdowns in growth this past year. Emerging markets generally led world growth coming out of the crisis. They generated 67 percent of world growth from 2010-2014, but just 57 percent of world growth in 2015, based on IMF estimates. To highlight their importance to global growth, the World Bank estimates that a 1 percentage-point slowdown of growth in Brazil, Russia, India, China, and South Africa slows growth in other emerging-market countries by 0.8 percentage point, in newer frontier markets by 1.5 percentage points, and global growth by nearly half a percentage point (World Bank 2016). In addition, though, changes in expectations of growth or financial stability have spilled over into global markets (see Box 3-2 for more discussion of financial spillovers). Often, direct trade linkages may understate the transmission of shocks if sharp nonlinear contagion

takes place in financial markets. At various points in 2015 and early 2016, financial volatility in China seemed to spill into many markets around the world.

Real GDP in Brazil and Russia contracted over the first three quarters of 2015. Others, including Indonesia and Malaysia, grew more slowly between the first and third quarters of 2015 than during the same period in 2014. In South Korea, growth ticked up slightly, but remained below the average annual growth of real GDP from 2010 through 2014. Many emerging markets experienced both currency depreciation and declining official reserves during 2015, especially Malaysia, Turkey, Indonesia, South Africa, and Russia.

China is in the midst of rebalancing from an investment- and export-driven economy to an economy driven more by household consumption. Total (public plus private) investment accounted for 46 percent of GDP by the end of 2014. This is in contrast to advanced industrialized economies where total investment accounts for roughly 20 percent of GDP or other major emerging markets, like Brazil, India, Mexico, South Korea, and South Africa, where it tends to range between 20 and 30 percent of GDP. Between 2010 and 2014, China's private consumption share of GDP rose 2.0 percentage points while its investment share of GDP fell 1.4 percentage points, reflecting a slow shift in the composition of the economy. Rebalancing has become more a necessity than a choice as a large economy cannot both grow much faster than the world and be export-led. If it did, it would begin to crowd out the entire world market. For China to maintain strong growth and a constant export share of GDP, exports would have to rise from roughly 10 percent of total world exports to as much as half of world exports over the next 20 years, an unlikely occurrence. Even at a more moderate growth rate, keeping the same export contribution to growth would require China to take a very large share of world exports.

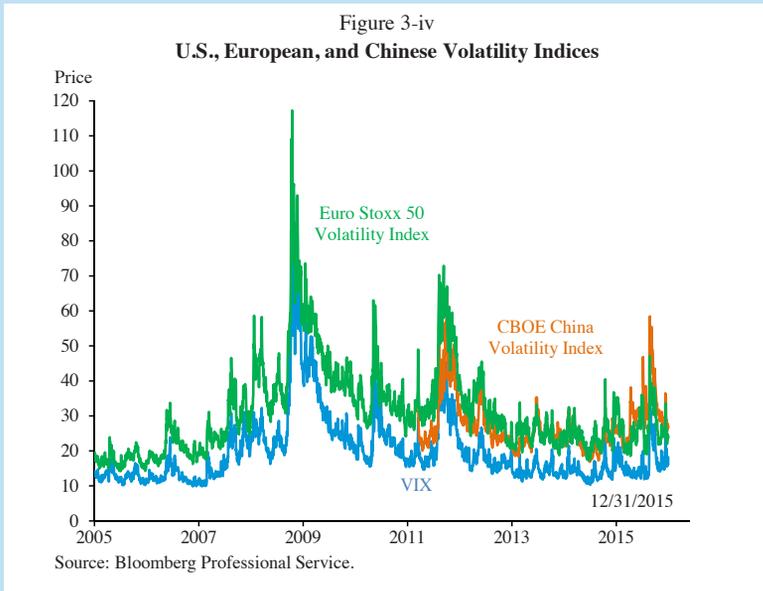
Thus, reforms that rebalance growth will be crucial to sustained and balanced growth in China and the rest of the world. China's economy is slowing from double-digit growth rates over the past decade (10 percent, on average, from 2005 to 2014) to still-rapid but more moderate rates between 6 and 7 percent. According to statistics based on official data, Chinese real GDP grew 6.9 percent in 2015, down from 7.3 percent in 2014 but close to the government's target of 7.0 percent. The extent of slowing in 2015 was unevenly felt in the economy. While service sector growth has picked up, consistent with a shift toward more consumption, Figure 3-9 shows various measures demonstrating slowing across industrial sectors, especially those related to construction.

Box 3-2: Market Volatility in the Second Half of 2015

Markdowns in expectations for global growth and commodities prices have at times in 2015 generated substantial swings in global financial markets. Beyond any direct effects from slower global growth, some of the potential acute risks for the U.S. economy come through spillovers from global financial markets. It can be possible for a large event or change in perceptions—such as an actual shift in policy or an abrupt rethinking of the growth prospects in a major economy—to shift investors’ risk sensitivities in a dramatic way. Equity prices across major markets moved in a highly correlated fashion, on average, in the fall of 2015 and the early weeks of 2016, which could signal that changes in risk sentiment are moving rapidly from one country to another.

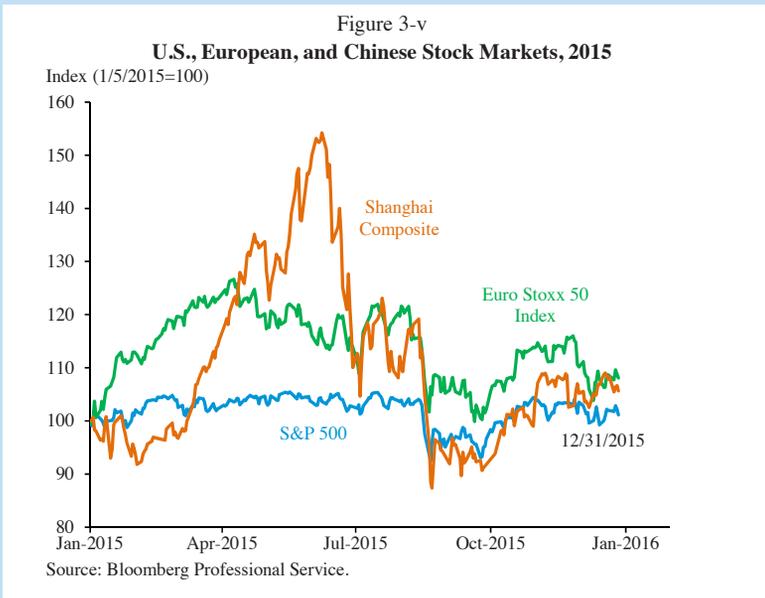
The summer and early fall 2015 were marked by gyrations in global asset markets. The degree and potential impact of the slowing of China’s growth rate, uncertainty over changes in advanced-country monetary policies, the future of Greece’s membership in the euro area, and the implications of declining commodity prices for commodity-producing countries and firms contributed to unease among investors, accompanied by market volatility. The VIX, a common measure of investor uncertainty, spiked in August and September (see Figure 3-iv) and correlations in equity prices across markets rose.

The period did see a considerable dive in equity prices as investors reacted strongly to even small changes in emerging data, like U.S. jobs



numbers or Chinese real GDP growth. Although markets in a number of countries did finish down for the year, the stock market in the U.S. finished roughly even, and in Germany and Shanghai finished up on the year despite the dramatic fluctuations in the summer.

Finance theory suggests that correlation in investor behavior can occur if investors are focusing on the same economic fundamentals to decide on trades, or when investors are just more uncertain about what will happen to economic fundamentals (Scharfstein and Stein 1990; Brunnermeier 2001; Veldkamp 2006 and 2011; Bacchetta and van Wincoop 2015). Some financial markets exhibited heightened correlation during this period of volatility. This heightened comovement has occurred again in the early weeks of 2016. It is important to note that markets are not always correlated and not every shock from abroad affects U.S. markets. During the substantial run-up of the Chinese equity market in the spring and then crash in the early summer of 2015, U.S. equity markets barely moved at all. But, in both late August 2015 and early January 2016, Chinese, European, and U.S. markets all moved together (see Figure 3-v). The elevated correlations could have been due to shocks that have a global reach (exchange rate policy changes in China, for example), or common shifts in perception (changing views of global demand or commodity market prospects), but it can also represent spillovers from one market to the next as investors act in a herd-like manner or losses in one market force asset sales in another. This suggests the



potential for rapid spillovers between even apparently unrelated markets should investors shift their views more than usual due to an unexpected piece of news. Swings in global finance and investor attitudes can have important impacts on the world economy (Borio 2012).

This box surveys recent trends in leverage, commodity prices, and policy that may relate to the way movements in global growth expectations can feed through into financial markets.

Leverage. Rising leverage—especially in some emerging markets—may have made financial markets fragile right now. Credit growth enables output growth as it allows consumers, corporations and the government to borrow against the future GDP, but large expansions of leverage across many emerging markets leaves them vulnerable to not just the slower growth that a debt overhang sometimes prompts, but also to a sharper crash. Surveys of history have found that large credit booms result in a financial crisis about one-third of the time, and often are followed by a growth slowdown even if there is no crisis (Jorda, Schularick, and Taylor 2011 and 2013).

An example of how these risks come together is the current degree of corporate debt in some emerging markets – especially the debt in foreign currency. The IMF recently labeled it a principal risk in its latest Global Financial Stability Report. Based on IMF data, emerging market corporate debt has grown from under 50 percent of GDP prior to the crisis to nearly 75 percent today. Even in countries with lower overall leverage, this can be problematic, as particular firms may be overly indebted, leading to defaults. Even if debt levels are manageable, if their home currency depreciates against the U.S. dollar (the principal foreign currency in which there has been borrowing), then the real burden of that debt rises for these firms, again, pushing them towards bankruptcy and default. 2015 saw a rise of emerging market corporate defaults and some key downgrades in sovereign debt ratings.

Still, foreign currency borrowing in emerging markets may not be as problematic as two decades ago. First, many of the firms that are borrowing have U.S. dollar revenues because they are exporters. In that sense, even if their home currency depreciates, they are still earning revenues in dollars and as such can pay their debt. To the extent that these firms are commodity exporters, they may face problems from reduced earnings, but the foreign currency borrowing itself may not be the key risk. In addition, countries overall have much stronger currency balance sheets than they did two decades ago (Benetrix, Lane, and Shambaugh 2015). Many countries expanded their foreign currency reserves, saw an increase in private foreign assets, and took more liabilities in local currency debt, FDI, and equity. These developments may insulate some

countries from downside risks in turbulent financial times. This has helped some emerging markets weather swings in exchange rates that previously would have involved substantial valuation losses. The IMF recommended in its January 2016 WEO update that emerging markets, in particular, continue to build resilience to volatile capital markets.

Commodity Prices and Nonlinear Effects. Many models assume a supply generated shock to world oil prices is a net positive for the world economy. Many oil producers, most notably Saudi Arabia, have substantial wealth buffers that smooth their spending across oil price changes, while oil consumer countries are often more liquidity constrained. But price declines that are deep enough can cause substantial changes in global capital expenditures on oil investment, and even deeper price changes can threaten corporate or sovereign borrowers. In the United States, eleven oil and natural gas producers with over \$500 million in liabilities filed for bankruptcy in 2015, defaulting on a combined \$21.2 billion of debt. This compares to 2014, when only one bankruptcy involving a firm with more than \$500 million in liabilities occurred. Market expectations of default (measured by CDS spreads) also show a sharp increase for energy firms, especially those in the United States.

In both August and in December of 2015, oil prices and major equity markets appeared to take cues from one another. The comovement of oil prices and equity returns may have reflected a common response to changing expectations of future global growth. However, an ongoing concern is that oil prices could potentially decline below some threshold that would result in substantial increased number of bankruptcies by oil producers. Although increased oil-sector bankruptcies would have some modest negative effects on the economy, the chief risk is that the resulting oil-sector bond defaults could raise bond investors' concerns about credit markets more broadly, which in turn would depress aggregate economic activity. This is an example of nonlinear effects in asset markets where movements of a price or economic data may be harmless or even positive for the economy within a certain bound, but outside that bound, if there are highly leveraged players in the market, it can have negative effects on financial markets.

Policy. A crucial caveat to the potential financial risks is the extent to which financial systems are more robust than during financial crises over the past 20 years. First, U.S. investors do not have large exposure to emerging market corporate assets. Even with respect to broader volatility, regulations adopted under the Dodd-Frank Act have significantly reduced the exposure of large financial institutions in the United States to risk associated with recent bouts of instability in equity and other asset markets. Financial institutions' stock of capital serves as a cushion to

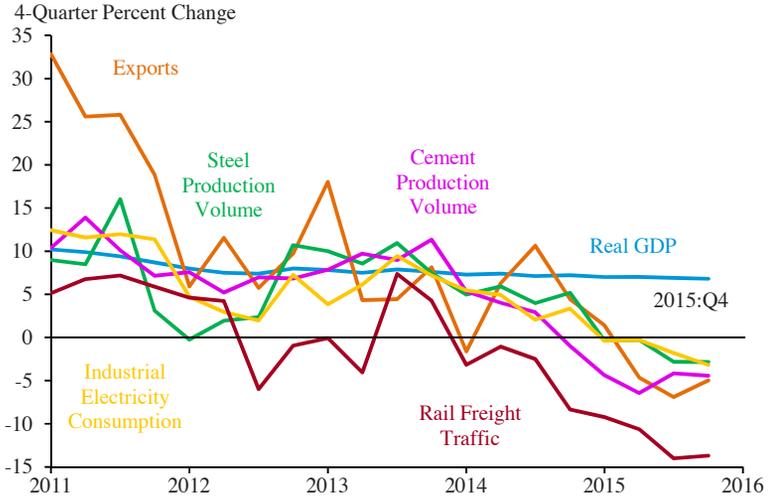
absorb unexpectedly high losses. Increased capital requirements under Dodd-Frank increase the size of this cushion. Measures from the New York University Volatility Institute suggest banks are better armed to weather market turbulence than they were even just a few years ago. In addition, some rules have made it more costly for banks to engage in speculative trading: the “Volcker Rule” implemented in July also limits the kinds of risks that banks can take when they invest their stock of capital before raising alarms with regulators. Finally, some financial institutions that were previously able to exploit regulatory loopholes have been brought under the regulatory umbrella.

The rules that have helped push the industry in this direction are not unique to the United States, but have been part of a broader push in the Basel III agreement and discussions within the euro area. The designation of crucial global institutions as “globally systematically important financial institutions” has placed extra capital requirements and rules on some firms and established resolution authority for these institutions, making the likelihood that a major failure generates a “Lehman shock” smaller. It requires great hubris to assume that the financial markets are bulletproof, but they may now be able to better withstand shocks than a decade ago.

China’s demand for imports from many trading partners also has slowed considerably since 2014, such that weakening demand is also being felt in some global commodity markets where China is an important consumer (see Box 3-3). For instance, according to the World Steel Association, China accounts for nearly 45 percent of the world’s apparent steel consumption. Estimates based on available data suggest that China’s demand for steel may have fallen by as much as 30 million tons or more in 2015, an amount close to 10 percent of total steel exports by the top 10 steel exporters. This reduced demand for a variety of commodities has had a significant impact on world markets, as China is a leading export destination for numerous countries.

China’s currency policies also underwent noteworthy changes in 2015. China maintains a narrow trading band with respect to the U.S. dollar. Market pressure forced the renminbi (RMB) toward the weak edge of its trading band during much of 2014 and the first half of 2015 (see Figure 3-10). On August 11, the People’s Bank of China decided to adopt a new scheme in determining its reference rate, basing it on the RMB’s previous closing and allowing a plus or minus a 2 percent trading band, accompanied by a depreciation of the RMB. This shift came amidst, and may have contributed to, global market volatility in August. Between August 10 and the end of

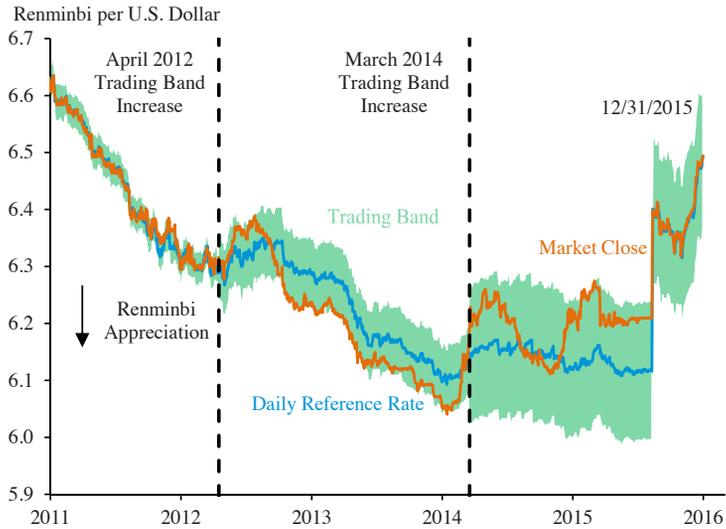
Figure 3-9
Measures of Industrial Activity in China, 2011–2015



Note: Industrial electricity consumption is "secondary industry" consumption. Real GDP is year-to-year percent change.

Source: China National Bureau of Statistics; State Administration of Foreign Exchange; China Electricity Council; Haver Analytics.

Figure 3-10
China's Foreign Exchange Rate and Trading Band, 2011–2015

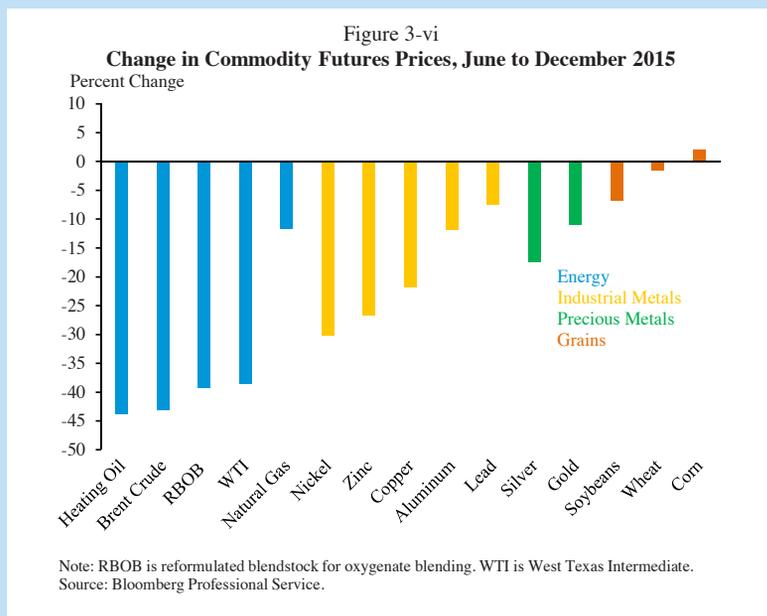


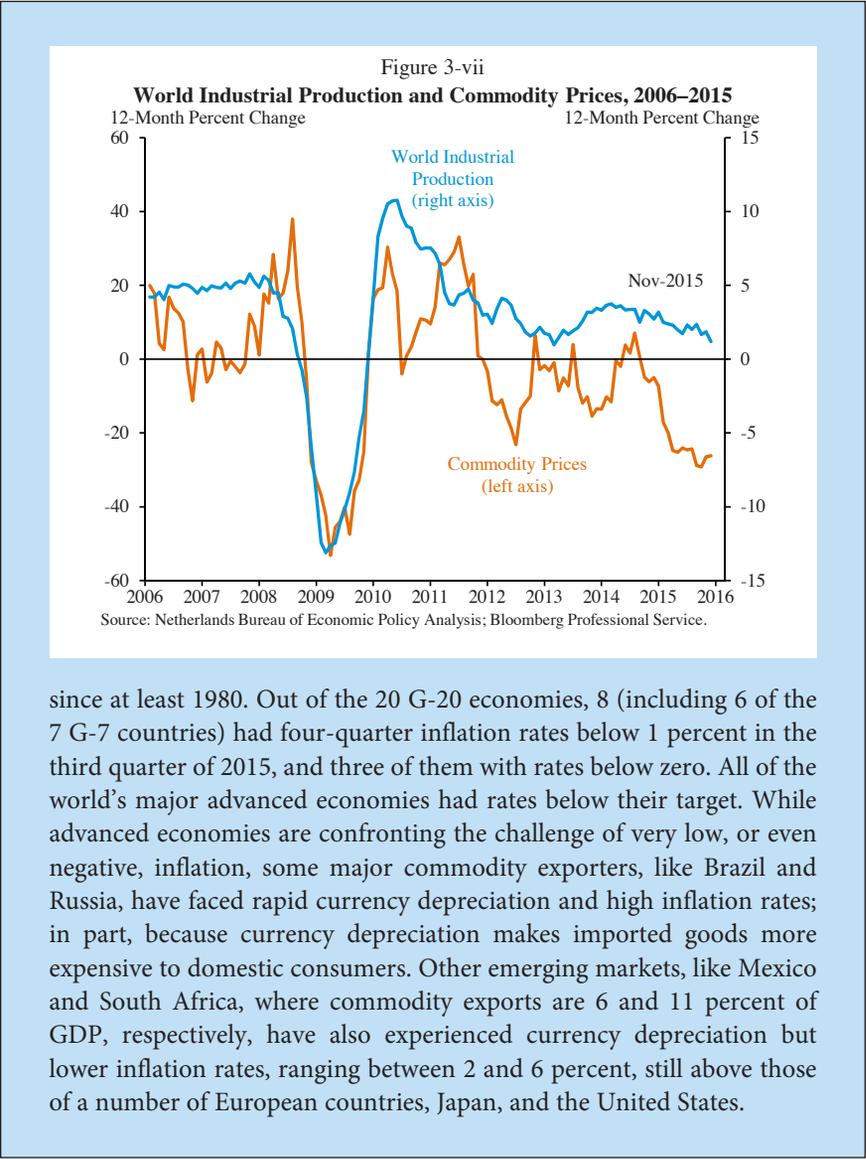
Source: Bloomberg Professional Service.

Box 3-3: Commodity Prices and Inflation in the Global Economy

The drop in commodity prices seen in Figure 3-vi resulted in part from weakness in the world economy, including slowing demand from China, which is a large consumer of many commodities in the global marketplace. The slowdown in the Chinese construction and manufacturing sectors contributed to a drop in demand for commodities that has been felt worldwide, and some of the most precipitous drops in commodity prices hit during the summer, amid growing market concerns about China's economy. Slower global growth has implied lower demand for various commodities; for example, Figure 3-vii shows that the rise and fall in world industrial production growth in recent years coincided with sharp movements in commodity prices. The most-recent significant drop in commodity prices occurred alongside a relatively small decline in global industrial production, which suggests that, to some degree, it is driven by weak demand. Still, the commodity price drop seen in 2015 was much steeper than the fall in industrial production, likely reflecting shifts in supply or re-evaluations of long-term demand prompted by the summer's financial market turbulence. Whatever the underlying reason, the drop in commodity prices has caused economic turbulence in a number of commodity-exporters, especially in emerging markets.

The decline also may be contributing to an interesting contrast in countries' experiences with inflation. Global inflation in 2015 is on pace to be at its lowest rate since 2009, and barring 2009, its lowest rate





2015, the cumulative depreciation in the spot rate was 4.6 percent against the dollar. Since August, the authorities have sold foreign exchange to support the RMB, as the market was surprised by the sudden depreciation, exchange rate expectations reset, and private capital outflows continued. The end of 2015 and start of 2016 has also seen renewed discussion of the value of the RMB versus a basket of currencies—not just the U.S. dollar—as well as greater volatility in the exchange rate. Clear communication by China of its policies and actions to the market as it makes an orderly transition to a market-determined exchange rate will help guide market expectations.

In November 2015, the IMF voted to include the RMB as the fifth currency used to underpin the IMF Standard Drawing Right (effective October 1, 2016), which globally serves as an important unit of account. Despite many steps toward financial liberalization and openness, continuing controls on cross-border flows of capital and RMB trading pose many questions regarding the future path of its integration into the global economy.

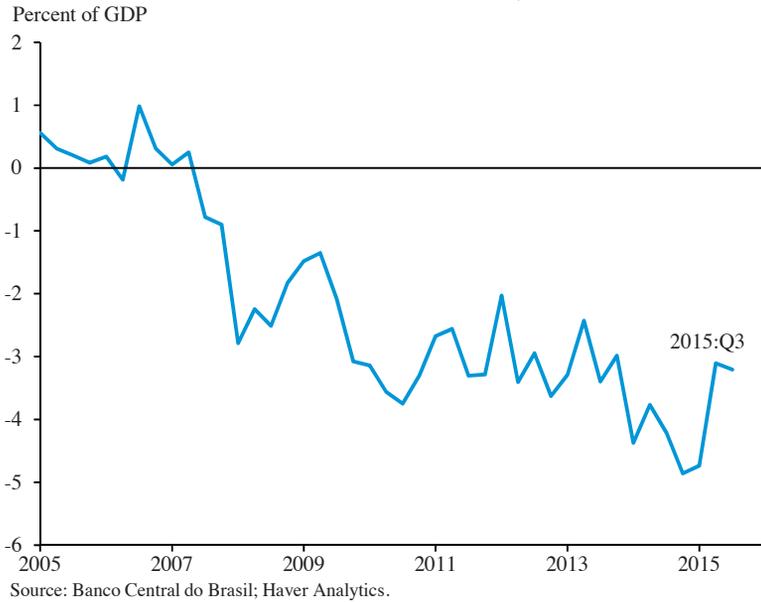
Brazil is one of the countries hit hardest by the recent collapse in commodity prices, in combination with other domestic challenges, with GDP contracting more than 5 percent at an annual rate over the first three quarters of 2015. The currency lost roughly a third of its value against the dollar in the year after December 2014. Although it has fueled domestic inflation, currency depreciation has generated a rebound in exports (both in real, local-currency-denominated terms and as a fraction of GDP) and in the current account in 2015, which narrowed considerably from a deficit of 5 percent to about 3 percent of GDP (see Figure 3-11). The IMF has espoused flexible exchange-rate regimes like Brazil's for weathering commodity-price downturns under fiscal constraints.

As a group, the low-income economies (LICs)—defined as economies with gross national income (GNI) per capita of \$1,045 or less by the World Bank, or a group of 60 countries identified as “low-income” by the IMF—were a bright spot in global economic growth in recent years. Real GDP growth in low-income economies had risen from just over 5 percent on average in the 2001-07 period, to about 6 percent in 2014. However, both the 2016 World Bank Global Economic Prospects and the IMF report that GDP growth in LICs fell to between 4.8 and 5.1 percent in 2015. Depending on how one defines the category, between a half and two-thirds of LICs are commodity exporters. The commodity price decline is taking a toll on public finances, current account balances, and economic growth in these countries, making them more vulnerable to both domestic challenges and external shocks such as global financial turbulence.

Not every emerging market has seen disappointing growth. India, for example, experienced strong GDP growth in 2015 with estimates for growth continuing at roughly 7 percent in 2014, 2015, and 2016 (projected). India, along with Argentina, were the only G-20 countries estimated to have grown faster in 2015 than the IMF had predicted a year earlier. Its status as an important player in service industries, as opposed to commodity or manufacturing exports, has likely helped its continued growth, and a pickup in investment may come as a result of recent policy reforms.

Still, the slower growth around the globe has had spillovers to the U.S. economy. Weaker growth abroad than in the United States tends to put

Figure 3-11
Brazil's Current Account Balance, 2005–2015



upward pressure on the U.S. dollar and downward pressure on exports, both of which were observed in 2015.

U.S. TRADE

The U.S. nominal trade deficit in goods and services narrowed slightly from 3.1 to 3.0 percent of GDP in 2015, as measured in the national income and product accounts. The trade deficit in levels widened slightly from \$508.3 billion in 2014 to \$531.5 billion in 2015 as goods exports fell faster than goods imports and trade in services remained almost stable, reflecting the global headwinds discussed above. The trade balance shrank as a share of GDP as output grew faster, reflecting the strength of the domestic economy relative to the rest of the world. Figures 3-12 and 3-13 show these balances calculated according to the balance of payments method. U.S. services exports continue to grow relative to U.S. goods exports, as they have since the start of the digital revolution in the 1990s.

Services make up 32 percent of our exports, but only 18 percent of our imports (see Figures 3-14 and 3-15). Four out of every five American jobs are in the service sector. The Department of Commerce estimates that services exports supported 4.6 million U.S. jobs in 2014.

Figure 3-12
U.S. Trade in Goods, 1992–2015

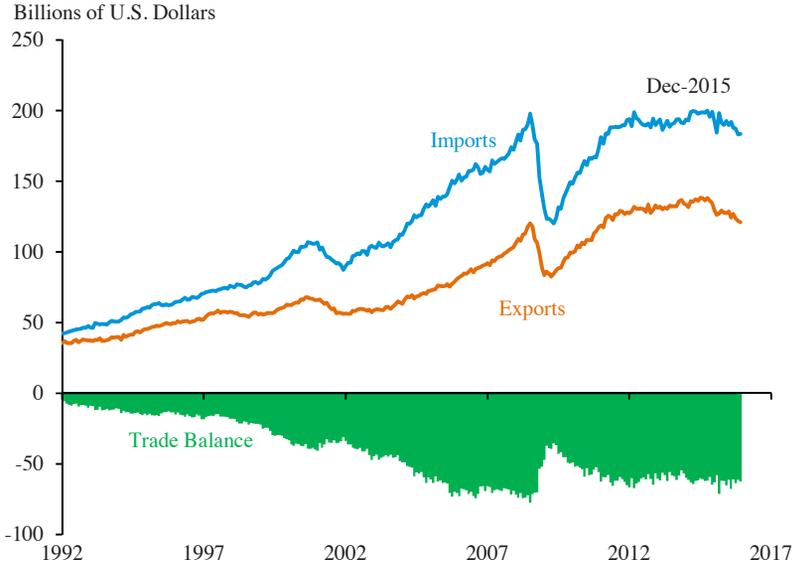


Figure 3-13
U.S. Trade in Services, 1992–2015

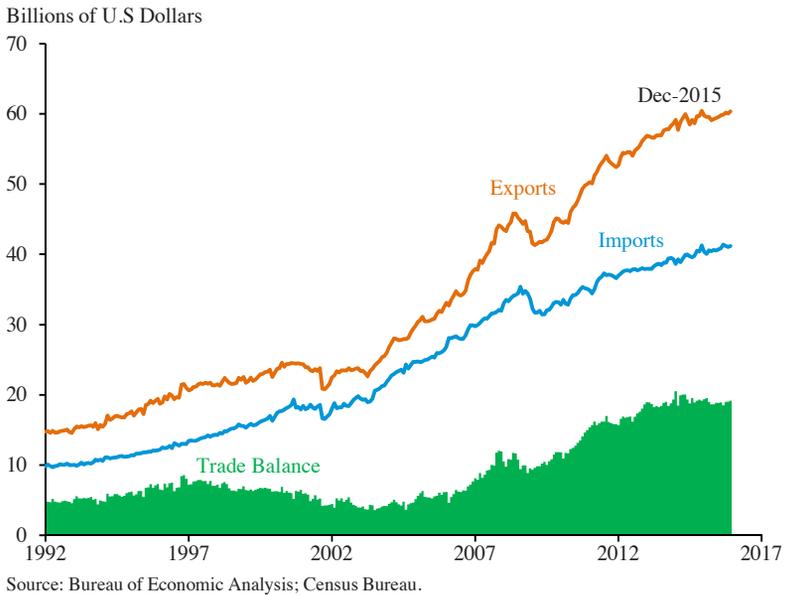
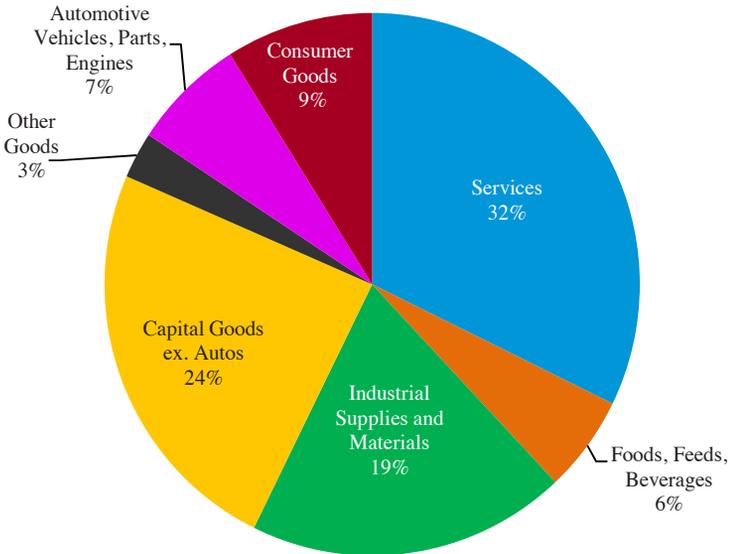
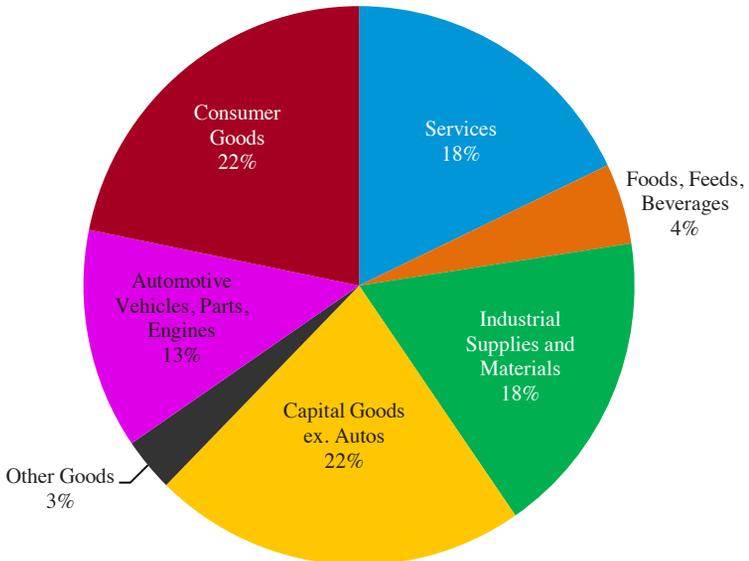


Figure 3-14
Composition of U.S. Exports, 2015



Source: Bureau of Economic Analysis; Census Bureau.

Figure 3-15
Composition of U.S. Imports, 2015



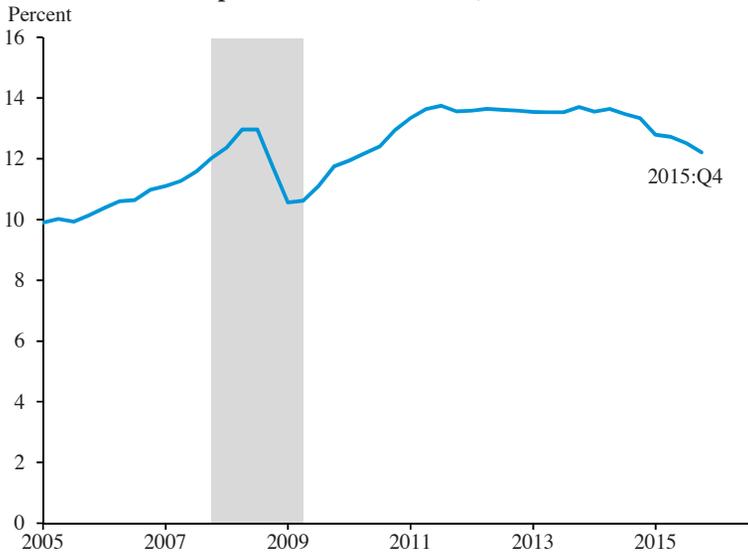
Source: Bureau of Economic Analysis; Census Bureau.

U.S. exports are 12.5 percent of the size of U.S. GDP, much higher than 10 years ago (see Figure 3-16). They peaked at nearly 14 percent of U.S. GDP in 2011 and 2013. Until very recently, real exports were consistently increasing, so the decline demonstrates that our economy is growing faster than global demand for U.S. goods, another manifestation of the headwinds discussed above.

Beyond the simple demand component of GDP, exports provide many benefits to the economy. Exports support nearly 12 million U.S. jobs according to estimates by the Department of Commerce, a fact that is more important given that exporters pay as much as 18 percent higher wages, on average, than non-exporters (see below for more detailed discussion). Growing exports can help generate productivity growth as higher productivity sectors and firms expand with access to a larger market. This allows them to employ a higher share of the labor force in these high-productivity firms. In addition, a rich literature discussed in Chapter 5 documents incentives that access to global markets give for firms to innovate.

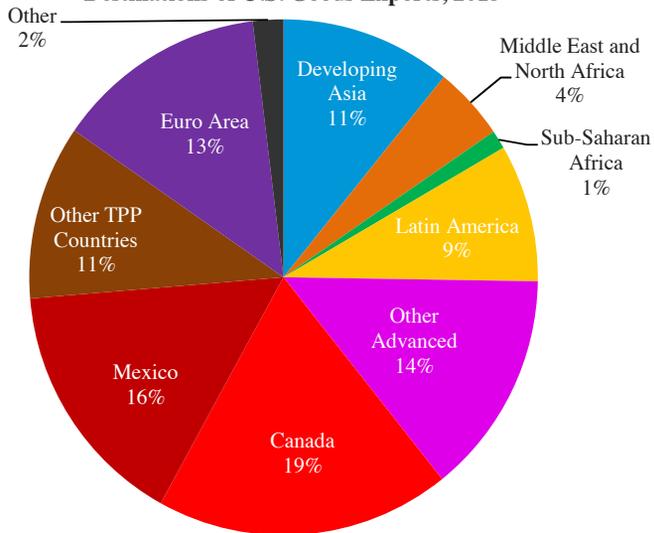
Trade is important both for U.S. firms and for supporting high-paying jobs. Between mid-2009 and the end of 2015, exports of goods and services accounted for more than a quarter of U.S. economic growth. As of 2014 (the most recent data available), more than 300,000 U.S. companies were engaged in exporting, the vast majority of them small and medium-sized businesses. Research published by the U.S. Census Bureau illustrates the strikingly high-quality jobs these companies support. Non-exporting firms employed an average of 13 workers apiece at payrolls averaging \$34,814 per worker while exporting firms employed an average of 243 workers each at payrolls averaging \$51,302 per worker (Census 2012). Other research by Riker (2010) and Riker and Thurner (2011) confirms the existence of an exporter wage premium, showing that workers at exporting firms earn up to 18 percent more, on average, than non-exporting firms. Riker (2015) provides updated estimates in a similar range, with exporting firms paying premiums of up to 19 percent for blue collar workers, and 12 percent for white collar workers. Fajgelbaum and Khandelwal (2014) estimate that trade openness has increased the purchasing power of American consumers in a progressive way. According to their calculations, households in the lowest third of the income distribution gain more than half of their purchasing power from U.S. trade and middle-income households gain more than a quarter of their purchasing power from U.S. trade. See Box 5-4 for a further discussion on how trade can promote innovation and economic growth. About half of U.S. exports go to emerging markets, demonstrating our interdependence with economies that have increasingly experienced challenges to growth during 2015 (see Figure 3-17).

Figure 3-16
Exports as a Share of GDP, 2005–2015



Note: Shading denotes recession.
Source: Bureau of Economic Analysis.

Figure 3-17
Destinations of U.S. Goods Exports, 2015



Note: Reflects data through September. TPP denotes the Trans-Pacific Partnership trade agreement.
Source: International Monetary Fund.

Box 3-4: The Importance of the Trans-Pacific Partnership (TPP) for the U.S. Economy

The complicated global economic environment underscores the importance of the President's trade agenda in opening new markets and ensuring a level playing field for U.S. firms. The centerpiece of that agenda is the Trans-Pacific Partnership (TPP), a comprehensive and high-standard trade agreement with 11 other countries—including 3 of the United States' 5 largest trading partners—in one of the most dynamic, fastest-growing regions of the world. With 45 percent of the \$726.5 billion in U.S. exports of goods and 25 percent of the \$178.3 billion in U.S. exports of services going to TPP countries in 2014, no previous free trade agreement has covered such a large share of U.S. trade. U.S. exports to TPP countries supported an estimated 4.2 million U.S. jobs in 2014, more than a third of the 11.7 million U.S. jobs supported by exports to the world.

The TPP will make it much easier to sell American goods and services to this rapidly growing market. It will eliminate over 18,000 tariffs on U.S. goods exports. It locks in zero-tariffs on 98 percent of goods traded, not just eliminating tariffs but ridding businesses of the uncertainty that tariffs might suddenly rise in a market they serve. For example, tariffs up to 59 percent on machinery and up to 32 percent on fresh fruit, industries where it can take time between investing in expanded capacity and when producers start earning revenues, would be phased out or eliminated, enabling producers to invest upfront without worrying that tariffs might later arbitrarily be revived. It promotes expanded digital and services trade with safeguards for privacy and security. It makes important strides to help small- and medium-sized businesses, including streamlining trade barriers like complicated standards and technical regulations, which make it hard for small businesses to access new markets, providing only one set of rules to export their goods rather than separate standards for each of the 11 countries. It reduces a slew of customs frictions, allowing e-filing of customs forms and advance valuation and ensuring that goods can pass through ports expediently, with special provisions for the express deliveries so important to many smaller firms.

Under the TPP, the United States will help set the standards for free and fair trade in the Pacific Basin. The TPP is part of a new generation of agreements, going further than any prior agreement to advance the wellbeing of workers and firms in the United States and the region as a whole. Under TPP, partners have agreed to adhere to labor standards of the International Labor Organization, including the right to unionize and commitments to enforce prohibitions on child and forced labor. For

instance, Vietnam's and Malaysia's workers will for the first time gain the freedom to form independent unions, lifting decades-old restrictions. TPP will also require Malaysia to fully implement recently passed amendments to the country's Anti-Trafficking law, taking an important step to address human trafficking issues. The TPP has enforceable provisions to prevent illegal wildlife trafficking, discourage subsidy programs that increase pressure on fisheries stocks, and help prevent illegal logging. The labor and environmental standards will be enforceable with dispute settlement and trade sanctions, if necessary, helping improve quality of life in the region and avoid unfair competition. In dispute settlement, it offers improved transparency, includes opportunities for public comment in dispute settlement, and reaffirms each country's right to regulate in the public interest for national security, health, safety, financial stability, and environmental reasons. It levels the playing field with strong rules to help make sure that governments cannot give unfair advantages to their state-owned enterprises and companies cannot gain a competitive advantage by undermining worker protections and environmental regulations, which is a high risk if trade integration continues in the region without U.S. involvement.

Research suggests substantial positive impacts on both U.S. exports and incomes if TPP is put into force. One prominent study by Petri and Plummer (2016) from the Peterson Institute predicts a significant gain for the United States—an additional 0.5 percent in real annual income, with the majority of the benefit going to labor in the form of higher wages—including an expansion of U.S. exports by more than 9 percent relative to a world without the agreement. It also predicts large gains for even the poorest among the TPP countries. Although the authors note that tariff reductions were more ambitious than many anticipated, roughly half of the economic benefits arise from reductions in non-tariff barriers. Another study released recently by the World Bank concurs that TPP would deliver significant benefits to the U.S. economy, boosting income and exports by tens of billions relative to a world without TPP.

Delay or failure to implement TPP risks substantial costs. Exporters may watch new opportunities to expand delayed or missed, a cost which Petri and Plummer (2016) estimate to be \$94 billion if implementation is delayed by even just one year. At the same time, China, the European Union, Japan, and other economies are negotiating preferential agreements whose effect in the absence of TPP would be to create or exacerbate tariff differentials that put U.S. exports at risk and may reduce incentives for goods-producing industries to invest in the United States.

The challenging environment for U.S. exports is an important motivation for the President's trade agenda, including the Trans-Pacific Partnership agreement, which was closed in October and submitted to Congress soon afterward (discussed in Box 3-4, as well as in Chapters 1 and 5), and the Trans-Atlantic Trade and Investment Partnership negotiations currently in progress, as well as a number of other initiatives.

CONCLUSION

Slower global growth in 2015 was both a product of longer-term supply—slower productivity growth and slowing labor force growth—and demand factors—weak investment growth and longer-term demand slow-downs. In addition, though, continued cyclical weakness in many areas of the world combined with a sharp emerging-market slowdown produced the slowest global growth rate since the recovery from the global financial crisis began. The United States has been a relative bright spot in the world economy, gradually approaching full employment levels of output and generating substantial portions of global demand. It will be crucial that the world economy not return to a model prevailing prior to the crisis where too much of the global economy relied on the U.S. consumer. Still, forecasts are for these global headwinds to continue to weigh on U.S. growth in the near future—which is why both strengthening the U.S. economy to ensure it is more resilient while working with partners abroad on their growth is a key priority for the President.